From: Tim Larson <tjlarson@gw.dec.state.ny.us>
To: Emmy Thomee <exthomee.Fw.nysdec@gw.dec.state.ny.us...
Date: 12/21/99 12:35pm
Subject: Info for 12/21 @ 1:00pm Telephone Conference

In preparation of the above-referenced meeting, please print out, in WordPerfect, a copy of the attachments. The second attachment everyone should have rec'd previously, the first attachment may be new to some people.
Thanks,
Tim

Issues for the Ecological Risk Assessment Breakout Group

TAMS' (M. Moese and M. Spera) comments shown in red and italics (November 22, 1999).

It appears as if we are going to get into major discussions (i.e., lectures) on how we should analyze each set of biological/chemical data and that efficient determination of any future sampling needs will become a major problem.

A. Site-Specific Sediment Quality Values – Direct Toxicity

1. General considerations

a. Why are site-specific sediment quality values needed and how can they be used to evaluate ecological risks and guide potential remedial actions?

NYSDEC's position was clear in the October meeting that they would be considered if they were done in a scientifically-sound manner. See also TAMS' 11/17/99 e-mail to Tim Larson regarding use of site-specific SQVs in the RI/FS process.

b. Is the AET approach appropriate for site-specific use in Onondaga Lake?

NYSDEC's position was clear in the October meeting that they would be considered if they were done in a scientifically-sound manner. NYSDEC accepted the AET approach in its 7/3/96 letter.

c. How can the AET approach be used to set multiple kinds of sediment quality values to aid decision-making?

Only as it relates to potential benthic impacts; other ecological risk based remedial action alternatives should be considered in the FS as well.

d. Is the quality of the 1992 biological data for the lake appropriate for use?

We need to discuss this with EPA prior to the meeting: Sediment data (i.e., 0-2 cm vs. 0-15 cm) - See comment on page 31 in Emmy Thomee's August 14, 1998 memo on the Draft BERA - Page 5-5, Section 5.4.1, Top Sediments (BTAG comment).

e. What additional data are needed?

See NYSDEC additional sampling request. There could be a concern about Allied collecting additional benthic data during any re-sampling for community analysis because of year to year differences in community structure, time of year the samples are collected, etc.

NEW

f. In derivation of AET, should we be using dry-weight or TOC-normalized sediment data? - Work in Washington State on freshwater sediment AET criteria suggest that it is more appropriate to use dry-weight normalized data even for organic contaminants.

7. Chronic toxicity

a. Are benthic macroinvertebrate community data appropriate for assessing chronic toxicity?

A lot will depend on how the data are used and effects analyzed. Washington State Regulations for marine sediment confirmatory biological effects tests require testing using five separate tests - 2 acute tests, benthic infaunal abundance, and 2 chronic tests. **More information on this issue is being provided from Washington State Department of Ecology.**

b. What protocols should be used for chronic sediment toxicity tests?

See comment on page 33 in Emmy Thomee's August 14, 1998 memo - Section 5.4.2 - Results of Sediment Toxicity Tests. It appears as though either DEC or EPA suggested in their original comments that the new bioassays be performed.

- Test species and endpoints

See NYSDEC additional sampling request

- Test duration

See NYSDEC additional sampling request

- Exposure conditions (e.g., water quality characteristics, static/flow-through regimes)

See comment on page 33 in Emmy Thomee's August 14, 1998 memo - Section 5.4.2 - Results of Sediment Toxicity Tests. It appears as though either DEC or EPA suggested in their original comments that the new bioassays be performed.

c. How should the toxicity data be analyzed and interpreted?

Determine if possible an EC50 then use uncertainty factors to derive acceptable sediment concentrations as per Gina Ferreira fax to Emmy which was sent to Allied for Willis Ave (i.e., UCF lethal = 15, UCF nonlethal = 10) - Is this appropriate? This should be discussed with DEC/EPA prior to the meeting.

4. Benthic macroinvertebrate analysis

a. What methods of analysis should be used?

- Community metrics (e.g., taxa richness and diversity)

This area of discussion will be open to a lot of debate. We will need to go into the meeting with concurrence of the agencies and a fall back position. Work in which PTI (Exponent) was involved included a peer review by a panel of benthic experts to examine what metrics and statistics are most useful in examining benthic impacts as it pertains to the Puget Sound work (PTI, 1993). The document to be peer reviewed was one developed by Roy F. Weston for the Washington Department of Ecology, USEPA Region 10, and the Puget Sound Water Quality Authority in March 1999. This document determined that for the ability to discern impacts, cluster and ordination analyses were rated low while various indices had variable ability to discern impacts. The expert panel concluded from their review that more than one endpoint should be used with species richness, total abundance and taxa abundance being the primary benthic endpoints with secondary endpoints of indicator species abundance and individual species abundance being rated the highest for sensitivity and objectivity. In addition, they concluded that univariate statistics should be performed to compare the study area and reference locations, not multivariate statistics.

- Multivariate analysis (e.g., classification analysis)

This discussion should also include univariate techniques.

b. How can effects due to toxics be separated from effects due to other factors?

- Reference area comparisons

Use of univariate vs. multivariate statistical analyses. Also can we definitively state that the sediments in Otisco Lake and Onondaga Lake are comparable based on physical characteristics? (EPA Sediment Classification Methods Compendium 1992, Section 11.2.2, page 11-3).

- Depth stratification

I think most of us agree with this need. Problem may be that we do not have enough reference samples to do this comparison based on depth stratification.

- Triad analysis (i.e. synthesis of the benthic results with those for sediment chemistry and sediment toxicity)

Are we getting into another OLSQV determination? AET vs. Triad?

4. Effects of Lake Recovery on Sediment Toxicity

This discussion is not necessary for our sampling needs determination. NYSDEC requested during the October meeting a qualitative analysis in the revised BERA.

a. Improved water-column conditions in the hypolimnion
   - Increased concentrations of dissolved oxygen
   - Decreased concentrations of sulfide

b. Improved sediment conditions
   - Modifications of sediment total organic carbon (TOC)
   - Modifications of sediment acid volatile sulfides (AVS)
   - Modifications of sediment ammonia and sulfide

c. Relevance of acid volatile sulfides (AVS)

d. Data needs

B. Site-Specific Sediment Quality Values - Bioaccumulation

These are topics of secondary concern for the Lake BERA. Since we did not propose chemical analyses of benthics, phytoplankton and zooplankton in our additional sampling needs, we should first hear what they are proposing for additional sampling (not specified by the State) prior to discussing these issues. Discussions of the model and bioaccumulation factors should be deferred to a separate, later meeting.

1. Aquatic food web and approach to bioaccumulation modeling

a. Use of existing bioenergetics model results

Will need time for review to determine any response to this issue; TAMS' efforts in 1998 during revision of the mercury model did not include a review and rewrite of the fish component of the model.

b. Comparison to other approaches

c. Mercury and PCBs ??

2. **Sediment-macroinvertebrate bioaccumulation factors**

3. **Water-plankton bioaccumulation factors**

4. **Benthivore, planktivore, and piscivore bioaccumulation factor**

5. **Influence of improved water quality on bioaccumulation**

   a. Reduced phosphorus concentrations and primary productivity

   b. Reduced sediment TOC concentrations

6. **Whole fish vs fillet data**

7. **Data needs**

C. General Issues

This discussion is probably the most relevant to the sampling needs determination.

1. Approaches to "worst case" fish sampling
2. Forage fish composite vs forage species sampling
3. Whole fish vs fillet data
4. Congener-specific PCB vs Aroclor-specific analyses and TEQ vs Aroclor-specific risk assessment approach
5. *NEW: Wetlands – Discuss results of Allied's June 1999 wetland reconnaissance survey to assist in determining wetland sampling program (see Tim Larson's 11/8/99 e-mail to Al Labuz)*